

NATURAL HISTORY MISCELLANEA

Published by

The Chicago Academy of Sciences

Lincoln Park - 2001 N. Clark St., Chicago 14, Illinois

No. 137

November 3, 1954

A New Species of Milliped, Genus *Dixidesmus*, from Michigan

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During the course of my recent survey of the milliped fauna of Michigan, a new milliped of the family Dixidesmidae was discovered. The new species is herein named and described.

***Dixidesmus gausodicorhachus* new species**

Diagnosis. The species is distinct from related species in the strong development of the lateral bifid prong on each telopodite, in the two basal spines that subtend it, in the cluster of four, finger-like spines that are situated mesially within the weakly angulate bend of the distal portion of the telopodite of the male gonopod.

Male holotype. Head slightly larger than overlapping collum, vertex with a deep median sulcus, not reaching to the level of the antennae. Anterior region of vertex and labral area pilose. Antennae apparently composed of seven articles (eighth deeply seated and bearing four short sensory papillae), all clavate and hirsute; third article longest, sixth stoutest.

Collum smaller than the width of succeeding segment, almost semi-circular in dorsal aspect, caudal margin slightly emarginate mesially, cephalic margin evenly rounded; two rows of squamous tubercles, about eight in first row, ten in second.

Segments two, three, and four subequal to each other in breadth and length. Squamous tuberculate pattern much like *Pseudopolydesmus serratus*, the last two rows of dorsal tubercles well defined, those anterior to the shallow transverse sulcus obscurely defined or very low. Few extremely weak serrations along lateral margin of carinae, each serration with a minute seta directed posteriorly. Carinae wide and horizontal; dorsum consequently flat. Segments five and six slightly wider; segments

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eight to fifteen subsimilar, median sulcus of anterior metazonite region becoming progressively pronounced. Posterior margins of metazonites two to seven transversely straight, eighth with slight emarginations near posterior corner of carinae, nine to nineteen segments, posterior corners of carinae progressively produced until segments sixteen to nineteen are overlapping. Repugnatorial pores on carinae 5, 7, 9, 10, 12, 13, 15, 16 to 19, conspicuous, dorsal in position.

Anal segment is triangular in dorsal aspect, about as long as broad, distally blunted, bearing twelve setae on evenly spaced, small marginal tubercles, apex projecting thickly beyond anal valves. Valves not swollen, glabrous except for the usual two pairs of submarginal setae. Preanal scale evenly truncate with two caudolateral, setae-bearing papillae.

Bases of ultimate pair of appendages separated by distance equal to length of coxa ; distance between succeeding anterior appendages widening progressively to sixteenth segment ; all others subequal in sternal separation. Sternites between ninth, fifth, fourth, and third pairs of cursorial appendages produced into pairs of hirsute, rounded protuberances. Second pair of coxae weakly produced into penes. First pair of appendages smaller than the second pair. A dorsal view of the appendages in a laterigrade position shows all prefemora strongly developed and inflated dorsally ; each distal tarsus greatly elongated (longer than the combined lengths of coxa, trochanter, and prefemur) , thin and strongly clawed.

Conspicuous mesially between the cursorial appendages, the large gonopods protrude from a transversely oval, sternal depression into which they are not deeply retracted. When at rest, the gonopods lie against one another, femora appreciably separated, but telopodites frequently overlapping one another distally in the region of the lateral, antler-like spines.

In general configuration, the gonopod is similar to *Dixidesmus sylvicolens* Chamberlin 1943 and *Dixidesmus catskillus* Chamberlin 1947, particularly in respect to the relative positions of the supra- and subpulvillar spines, although in *Dixidesmus gausodicrorrhachus* the subpulvillar spine is not visible ectally (Fig. 1, B, C, and D) . Further striking differences are the more robust development of the lateral bifid prong, the two basal spines that subtend it and the cluster of four, finger-like spines that are situated somewhat mesially within the weakly angulate bend of the distal end of the telopodite. There is no spine or tooth within or near the terminal comb. A strong suture is evident at the level of the pulvillus.

Color in life, a rich red-brown; carinae margined with tan or cream, sometimes suffused with pink. Metazonites, mesiad to the repugnatorial glands, sometimes areolated with tan.

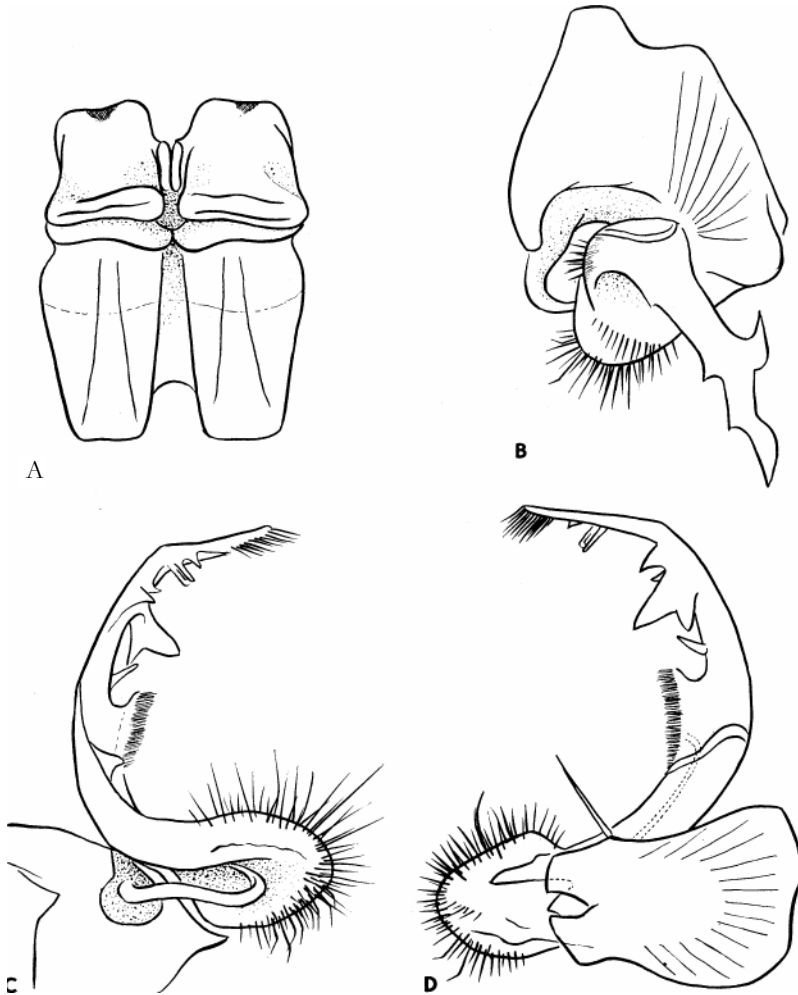


Figure 1. Gonopods and vulvae of *Dixidesmus gausodicrorhachus* n.sp.

A. Female vulvae, ventral view. B. Left male gonopod, ventral view. C. Median view of left gonopod showing solenite, pulvillus, and characteristic spining. D. Lateral view of left gonopod with seminal groove in evidence.

Sternites and appendages lighter ; antennae brown as dorsum.

Body length 22.2 mm.; width at tenth segment 3.5 mm.

Female allotype. Agreeing in most respects with male holotype ; differing as follows : body more robust (.carinae slightly smaller in proportion to diameter of body) , legs somewhat shorter and not as strongly developed as in male. Coxae of first pair of appendages parallel and contiguous throughout their lengths.

Vulval complex situated in a wide, transversally oval depression immediately behind the coxae of second pair of appendages ; not visible laterally. Vulvae chitinous, glabrous, shaped like paired cylinders in juxtaposition, partly cradled in a thin hyaline sheath (Fig. 1, A) . Ventral shoulder of vulvae visible through sternal aperture, sloping gently posteriorly, ending abruptly, separated from the lip-like, shallow posterior ledge by a deep fissure.

Body length 21 mm.; width at tenth segment 3.8 mm.

Type locality. Forest floor, west side of Garnet Lake on old U. S. Highway 2, Mackinaw County, T34N-R8W-S4, Michigan.

Type specimens. Male holotype and female allotype, and paratypes of each sex, deposited in United States National Museum, number 2117. These specimens were collected July 31, 1949, from *Betula papyrifera* leaf litter at the base of an old decayed stump in a thicket of *Betula* saplings. The name *gausodicrorhachus* refers to the crooked, bent outward, forked spine of the male gonopod.

Distribution. *Dixidesmus gausodicrorhachus* has been found in the following counties in the northern section of Michigan : Alcona, Alpena, Antrim, Benzie, Charlevoix, Cheboygan, Chippewa, Crawford, Dickinson, Emmet, Grand Traverse, Kalkaska, Leelanau, Mackinac, Montmorency, Oscoda, Otsego, Presque Isle and Wexford. Three of these counties, Chippewa, Dickinson, and Mackinac, are in the Upper Peninsula. Determining the southern limits of this range are the burned-over, oak-jack pine uplands that characterize many of the north-central counties, where not only milliped populations but also terrestrial isopods (Hatchett, 1941) are meager.

This species is undoubtedly closely related to either *Dixidesmus catskillus* Chamberlin 1947 from which it is not too far removed geographically (Catskill, New York) or *Dixidesmus branneri* (Bollman) 1887 (synonymy: *Polydesmus conlatus* Chamberlin 1943 ; *Dixidesmus christianus* Chamberlin 1946, ref. Loomis and Hoffman, 1948) from Indiana, Mississippi and the Great Smoky Mountains.

Autecology. The species occurs with less frequency than *Pseudopolydesmus serratus*, a frequent associate with which it undoubtedly competes for food and suitable habitat niches. This dixidesmid appeared to be restricted to the moist, but well-drained leaf litter, duff or humus provided by heavy mixed plantings of either *Acer* and *Betula*, or *Acer*, *Populus*, and *Betula*. Its preference for *Betula* was particularly well marked. In favorable localities as many as forty specimens were collected per square meter of forest litter. Though the species, like most geobionts, utilized all strata of the necron in favorable situations of mesic character, adults were generally restricted to the upper levels of the litter and the young to the lower strata of duff and humus.

During the breeding season, which is an extended one, sexually mature adults appeared on the surface of the litter even on bright sunny days where they sometimes were found copulating. At all other times they were confined within the litter and appeared lucifugous. The numbers of these diplopods did not seem to be consistently related to temperature or humidity changes, but an extended rainy period sometimes increased populations in the higher strata of the forest floor. Migrations from stratum to stratum were less pronounced in forests with a thick canopy. This species is highly sensitive to small humidity changes and is unable to adapt itself to the rapid changes of humidity that frequently occur in *Quercus* and *Pinus* associations. Hence, it is confined to the more stable microclimate of the *Acer* associates.

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